

THE SENSED PRESENCE MAY BE FACILITATED BY INTERHEMISPHERIC INTERCALATION: RELATIVE EFFICACY OF THE MIND'S EYE, HEMI-SYNC TAPE, AND BILATERAL TEMPORAL MAGNETIC FIELD STIMULATION¹

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Summary.—After sitting quietly within an acoustic chamber, 30 university men were exposed (singly) to binaural, complex stimulation (Hemi-Sync Tape), synchronized binaural and visual patterns (The Mind's Eye), or transtemporal magnetic fields for 30 min. Experiences were rated at the end of the treatment by questionnaire. The men who received the binaural stimulation (Hemi-Sync Tape) reported more intense sensed presences and ego-alien intrusions than did the other two groups. In a similar second experiment, 18 university women who received the binaural stimulation also reported these experiences. The results support the hypothesis that the sensed presence is facilitated by transient, neuroelectrical intercalation of the temporoparietal lobes and is associated with the intrusion into awareness of the right-hemispheric equivalent of the left-hemispheric sense of self.

According to the vectorial hemisphericity hypothesis (Persinger, 1993), any process that facilitates the intermittent intrusion of the right-hemispheric equivalent of the highly linguistic sense of self into left-hemispheric awareness will facilitate the experience of a "presence." This sensed presence or "entity," which is often attributed to mystical or spiritual origins, may be the right-hemispheric equivalent of the left-hemispheric processes that generate the sense of self and allow self-awareness (Persinger, 1992). Intrinsic neurostructure that facilitates hemispheric homogeneity such as the normal (right-handed) female brain should and does enhance the incidence of a sensed presence (Persinger & Richards, 1991).

Method

The present experiments were designed to ascertain the relative efficacy of external manipulations that could presumably enhance hemispheric intercalation by bilateral stimulation. For Exp. I, a total of 30 male university students, between the ages of 20 and 30 years, volunteered as subjects. Because the brains of right-handed men (Reite, Cullum, Stocker, Teale, & Kozora, 1993) are more functionally lateralized (and hence the probability of spontaneous intercalation is less), any potential effect must be relatively strong to induce statistically significant changes in the numerical rating of subjective experiences. In Exp. II, a total of 18 university women, between

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the ages of 19 and 28 years, served as subjects. All subjects received bonus points for a first-year psychology course for their participation.

On the day of testing, each subject sat quietly in a comfortable arm-chair within an acoustic chamber for about 5 minutes. This component of the procedure is considered important because substantial numbers of temporal cortical neurons are usually committed to responding to background sounds. Our working assumption has been that, within an acoustic chamber (Richards, Persinger, & Koren, 1993), these neurons are suddenly "disconnected" from their stimulus input and during this fluid state they can be recruited into the ongoing cognitive process (thereby "amplifying the intensity of the experience") and can become more sensitive to stimuli (such as weak burst-firing magnetic fields) that would typically be masked by background neuronal activity.

In Exp. I, each subject was assigned to one of three conditions in the serial order in which they arrived at the laboratory; not more than two subjects were tested per day. The first condition involved The Mind's Eye which is a small computer (Synetic Systems: PO Box 95530, Seattle, Washington 98145) that generates a preprogrammed (in this instance, Session No. 4) and synchronized pattern of input to specialized goggles that contain four light-emitting diodes for each eye and to stereoheadphones. The second condition involved The Monroe Institute's Hemi-Sync Tape (Interstate Industries, Inc., PO Box 130, Nellysford, Virginia 22958). It generates stereosounds intended to enhance hemispheric synchronicity. Exposure to a 10-mG transtemporal magnetic field pattern that simulates burst-firing of neurons for 1 sec. every 4 sec. comprised the third treatment. In Exp. II, the women were exposed to either the Hemi-Sync Tape or the magnetic field condition. Each treatment was given only once (about 20 to 30 minutes duration), and each subject only received one treatment. The technicians who executed the experiments were not familiar with the hypothesis, while the subjects were told that the experiment involved studying the effects of relaxation.

Immediately after the completion of the treatment each subject was asked to complete an exit questionnaire. It contained 20 items that reflected the most common phenomenological components of mystical and near-death experiences as well as frank artifacts, e.g., perception of a light flashing. Each item was evaluated as follows: 0 (never), 1 (occasionally), and 2 (frequently). One-way analyses of variance were completed for each of the 20 items by SPSS software. The precise description of the items and their characteristics have been reported elsewhere (Ruttan, Persinger, & Koren, 1990).

If the general model is correct, then major group differences should occur for items that refer to a "sensed presence" and "ego-alien intrusions" rather than for nonspecific experiences. Secondly, the Hemi-Sync Tape should generate greater effects than either the transtemporal stimulation or The Mind's Eye because asymmetric binaural, frank sonic stimulation should

evoke stronger neural representations than a single (although complex) but repetitive magnetic field exposure. Contiguous presentation of visual stimuli (with auditory patterns) would mask or inhibit the temporoparietal activity that promotes the intrusion.

Results

In Exp. I, one-way analysis of variance gave no statistically significant differences between groups ($F_{2,27} = 0.49, p > .05$) for the response intensity of the mean for all 20 items. There were only two statistically significant differences between groups for the 20 items. The two items were the experience of a presence ($F_{1,26} = 4.10, p < .05$) and the sensation that the experience was ego-alien ($F = 3.57, p < .05$). As predicted, *post hoc* analyses showed that the group who had experienced binaural stimulation from the Hemi-Sync Tape exhibited more frequent (M with SD in parentheses) sensed presences [1.0 (0.8)] and ego-alien intrusions [0.5 (0.8)] relative to these experiences for the magnetic field [0.2 (0.3); 0.0 (0.0), respectively] and The Mind's Eye [0.6 (0.6); 0.0 (0.0), respectively]. None of these values differed significantly from each other. Because the latter two groups reported no ego-alien experiences, a Kruskal-Wallis test was completed; it verified the enhanced incidence of ego-alien experiences within the Hemi-Sync group ($\chi^2 = 6.84, p < .05$).

In Exp. II, the women who experienced the Hemi-Sync Tape reported a significantly ($F_{1,16} = 4.95$, Kruskal-Wallis $\chi^2 = 3.79, p = .05$) more intense sense of presence [0.8 (0.8)] than did the group exposed to the bitemporal magnetic fields [0.1 (0.3)]. The women who were exposed to the bitemporal sounds reported that they experienced more intense ego-alien intrusions [0.4 (0.2)] than did those exposed to the bitemporal magnetic fields [0.0 (0.0)]; however, these differences only approached statistical significance (Kruskal-Wallis $\chi^2 = 3.40, p = .07$). There were no statistically significant group differences ($F_{1,16} < 1.00, p > .05$) between the mean scores for all responses within the experimental setting.

These results support the model that exogenous conditions which facilitate intercalation between the temporoparietal lobes of the two hemispheres increase the probability of experiencing a sensed presence. The intrusive nature of this input would be sufficiently different, i.e., "nonself," to be attributed to an ego-alien source. The relative efficacy of the Hemi-Sync Tape suggests that prosody in conjunction with differential binaural input may be a potent precipitating factor.

In conjunction with the vectorial hemisphericity hypothesis (Persinger, 1993) these results predict that a mildly depressed or temporal lobe labile (sensitive) person, when *surrounded* by emotive (religious) congregational singing within a church or mosque, would be more likely to experience a "sensed presence" and feel the "intrusion of another mind." Within this

context the mood-congruent and cognitively associated label would be, as predicted by Jaynes (1976), a visitation by a spirit or by a god. The occurrence of these experiences within close spatial proximity to large numbers of other human primates would be expected to evoke the opioid-like experiences which appear to be associated with social bonding and group interaction (Panksepp, Normansell, Herman, Bishop, & Crepeau, 1988). The pleasantness of these experiences would also enhance social affiliation with the group.

If the reductions in psychological depression and death anxiety (Persinger, 1985) were maintained and the sense of an integrated self were increased subsequent to these experiences, then attribution of these positive changes to the label (god, spirit, angel) and the conviction that the phenomenology was veridical would be reinforced. A marked interdependence between the neuro-cognitive processes which mediate group affiliation with the sense of self and religious beliefs would be expected. On the other hand, as predicted by Schacter and Singer (1962), similar ego-alien intrusions when the person is alone late at night or within an anxiogenic and novel context might evoke panic or terror and would be attributed to mood-congruent labels such as evil spirits, demons, or (the more contemporary variant) alien abductors.

If the Schacter and Singer model is applicable, then there should be a significant subset of the human population who are prone to ego-alien intrusions and whose attributions vary as a function of the affective characteristics of the context. These individuals would be more prone to report the presences of *both* gods (in positive contexts) and devils (in aversive contexts). However, the ultimate source of both the "good" and the "bad" attributions would be identical and would be the intrusions during brief interhemispheric intercalations of the person's *own* right-hemispheric equivalent of the left-hemispheric sense of self.

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